REMARKS

Applicants are amending their claims in order to further clarify the definition of various aspects of the present invention. Specifically, Applicants are amending claim 1 to recite that the epoxy resin composition "consists essentially of" an epoxy resin and an epoxy resin-curing agent, and have further amended claim 1 to incorporate therein the subject matter of previously considered claim 2. Note, for example, pages 8-16, particularly the first paragraph on page 16, of Applicants' specification.

In light of amendments to claim 1, claim 2 has been cancelled without prejudice or disclaimer; and in light of cancelling of claim 2, claim 15 has been cancelled without prejudice or disclaimer. Moreover, claim 16 has been amended, to be dependent on claim 4.

In addition, Applicants are adding new claims 20-22 to the application. Claims 20 and 21, each dependent on claim 1, further define amount of the skeletal structure respected by the formula (1) contained in the container, consistent with the description on page 9 of Applicants' specification. Claim 22, dependent on claim 1, recites that the epoxy resin contains an aromatic ring in a molecule thereof, consistent with the description on page 10 of Applicants' specification.

Applicants respectfully submit that all of the claims presented for consideration by the Examiner patentably distinguish over the teachings of the references applied by the Examiner in rejecting claims in the Office Action mailed August 20, 2007, that is, the teachings of the U.S. patent documents to Yoshimatsu, Patent No. 5,106,943, and to Kikuchi, et al, Patent Application Publication No. 2002/0146527, under the provisions of 35 U.S.C. §102 and 35 U.S.C. §103.

Initially, it is noted that the Examiner did not reject claim 2 over the teachings of Yoshimatsu. Note Item 1 on pages 2 and 3 of the Office Action mailed August 20, 2007. In view of incorporation of the subject matter of claim 2 into claim 1, it is respectfully submitted that the rejection over the teachings of Yoshimatsu is moot, and no further discussion thereof is necessary.

Moreover, it is respectfully submitted that Kikuchi, et al, would have neither taught nor would have suggested such a gas-barrier container as in the present claims, having at least one-gas barrier layer made of an epoxy resin cured product formed by curing an epoxy resin composition consisting essentially of an epoxy resin and an epoxy resin-curing agent, and containing at least 30% by weight of skeletal structure represented by the formula (1) in claim 1, the gas-barrier layer having an oxygen permeability of 2 mL•mm/m^2•day•MPa or lower measured at a temperature of 23ºC and a relative humidity of 60%. See claim 1.

Thus, and as will be discussed further infra, it is respectfully submitted that the teachings of Kikuchi, et al, would have neither taught nor would have suggested such gas-barrier container having the at least one gas-barrier layer, much less wherein such layer has an oxygen permeability as in claim 1, or wherein such layer is an epoxy resin cured product as in claim 1.

Furthermore, it is respectfully submitted that Kikuchi, et al, would have neither taught nor would have suggested such gas-barrier container as in the present claims, having features as discussed previously in connection with claim 1, and, additionally, wherein the container has further features as set forth in the dependent claims in the application, such as amount of skeletal

structure presented by the formula (1) contained in the container, as in claims 20 and 21; and/or wherein the epoxy resin contains an aromatic ring in a molecule thereof as in claim 22, more specifically wherein the epoxy resin contains moieties as in claims 3-5; and/or the further definition of the epoxy resin-curing agent as in claims 6, 12, 16 and 17; and/or wherein the container is produced by forming a gas-barrier laminated film or sheet containing at least one flexible polymer layer and at least one gas-barrier layer as in claim 8, with the flexible polymer layer being defined as in claims 9 and 10, and note also claim 14; and/or blending ratio between the epoxy resin and the epoxy resin-curing agent as in claim 11; and/or wherein the container is in the form of a hollow container, with 60-100% of a surface area of at least one of the inner and outer surfaces of the container being coated with the gas-barrier layer (note claims 13, 18 and 19).

The present invention is directed to gas-barrier containers, suitably used for purposes of receiving and preserving fruits, beverages, drugs, etc.

In recent years, as packaging materials for receiving and preserving contents, plastic films or containers have been predominantly used due to transparency, light weight and economical advantages thereof.

Recently, as containers for foods or beverages, hollow containers mainly made of polymers have been increasingly employed instead of conventional glass or metallic containers; however, the hollow containers mainly made of polymers are deteriorated in barrier properties to oxygen or carbon dioxide as compared to those made of glass or metals, and are unsuitable for preserving foods or beverages therein for a long period of time.

In view thereof, there have been proposed and practically used, hollow containers having a multi-layer structure including a layer made of a gas-barrier resin such as polyamide. However, production of the multi-layer hollow containers inevitably requires the use of a molding machine having a complicated structure, and it has been demanded to develop gas-barrier hollow containers that can be produced more simply.

There have also been known hollow containers mainly made of polymers, which have been coated with polyvinylidene chloride resins. However, since the resins contains halogen atoms, the formed containers suffer from problem such as environmental pollution or generation of harmful gases such a dioxin upon incineration thereof.

It has also been proposed to form a thin film of carbon or silica on inner surfaces of a stretch blow-molded hollow container made of polyester. However, this requires processing under high vacuum conditions, and inevitably requires use of large-scale apparatuses.

Thus, it is still desired to provide a container having gas-barrier properties whereby materials, such as fruits or beverages, can be preserved for a long period of time in the container, even under high-humidity conditions, and which can be produced by simple processing.

In view of the foregoing, and as a result of extensive research by the present inventors, the present inventors have found that when a cured product, formed by curing an epoxy resin composition, contains a specified skeletal structure, the resultant container is excellent in not only a gas-barrier property, but also various other properties such as transparency, retorting resistance and impact resistance, and such cured product can be formed by

relatively simple processing. Moreover, by utilizing such gas-barrier layer for the gas-barrier container as in the present claims, and wherein the gas-barrier layer has an oxygen permeability as in all of the present claims, objectives according to the present invention are achieved. That is, the gas-barrier container is less of a burden on the environment, due to use of non-halogen gas-barrier materials, and is excellent in economical efficiency and workability in production processes in forming such container. The gas-barrier container according to the present invention exhibits a gas-barrier property and is excellent in various properties such as interlaminar adhesion strength, gas-barrier properties under a high-humidity condition, impact resistance and retorting resistance. Note pages 37 and 38 of Applicants' specification.

Kikuchi, et al, discloses a packaging material capable of stably suppressing the permeation of oxygen through the container walls for extended periods of time. The packaging material has an oxygen-absorbing layer of a thermoplastic resin which is blended with an organic oxidizing component and with a transition metal catalyst, the thermoplastic resin being not substantially oxidized in the presence of the transition metal catalyst. This patent document goes onto disclose that it is desired that the thermoplastic resin be a xylylene group-containing polyamide resin having an amino end group (AEG) concentration of not smaller than 40 eq/10^6g. Note paragraphs [0019] and [0020] on pages 1 and 2 of this patent document. Note also paragraphs [0021] and [0030] on page 2. As for the thermoplastic resin, note paragraphs [0058]-[0061] and [0064] on page 4. As for the packaging material formed, note paragraphs [0107] - [0109] on page 7, and paragraphs [0124] and [0126] on page 8, of Kikuchi, et al.

Initially, note that in Kikuchi, et al, there is disclosed an oxygen-absorbing layer of thermoplastic resin. It is respectfully submitted that the disclosure of the packaging material in Kikuchi, et al, having the oxygen-absorbing layer of thermoplastic resin, would have neither taught nor would have suggested the gas-barrier layer for the present claims made of an epoxy resin cured product formed by curing an epoxy resin composition consisting essentially of the epoxy resin and the epoxy resin-curing agent. In this regard, it is emphasized that Kikuchi, et al, requires a transition metal catalyst and organic oxidizing component, as well as a thermoplastic resin, in the oxygen-absorbing layer.

Again, it is emphasized that Kikuchi, et al, discloses use of an oxygen-absorbing layer. Such disclosure would have neither taught nor would have suggested, and in fact would have taught away from, that aspect of the present invention as in all the claims, wherein the gas-barrier layer has an oxygen permeability of 2 mL•mm/m^2•day•MPa or lower as measured at a temperature of 23ºC and a relative humidity of 60%.

In the paragraph bridging pages 3 and 4 of the Office Action mailed August 20, 2007, the Examiner correctly refers to Kikuchi, et al, as disclosing a packaging material "having an oxygen-absorbing layer of thermoplastic resin". It must be emphasized, however, that the present claims recite a gas-barrier layer, having a specified maximum oxygen permeability. Such oxygen-absorbing layer of Kikuchi, et al, would have neither taught nor would have suggested the gas-barrier layer of the present claims.

Reference by the Examiner to Example 4 of Kikuchi, et al, as describing an oxygen permeability, the Examiner also referring to Table 1 of

Kikuchi, et al, is noted. It must be emphasized that Kikuchi, et al, discloses O_2 permeation of the formed cup. It is respectfully submitted that such disclosure would have neither taught nor would have suggested oxygen permeability of the gas-barrier layer as in the present claims, and advantages thereof.

Moreover, it is again emphasized that the present claims recite that the gas-barrier layer is made of an epoxy resin cured product and is formed by curing an epoxy resin composition consisting essentially of the epoxy resin and the epoxy resin-curing agent. In contrast, Kikuchi, et al, requires, in addition to the thermoplastic resin, an organic oxidizing component and a transition metal catalyst in the oxygen-absorbing layer. Such components as in Kikuchi, et al, including the organic oxidizing component and transition metal catalyst, of the oxygen-absorbing layer of Kikuchi, et al, would have neither taught nor would have suggested the gas-barrier layer of the gas-barrier container of the present claims, of an epoxy resin cured product that is formed by curing an epoxy resin composition consistently essentially of the epoxy resin and epoxy resin-curing agent.

In view of the foregoing comments and amendments, reconsideration and allowance of all claims presently pending in the above-identified application are respectfully requested.

To the extent necessary, Applicants petition for an extension of time under 37 CFR §1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to

Deposit Account No. 01-2135 (Case No. 396.44491X00) and please credit any excess fees to such deposit account.

Respectfully submitted,

/William I. Solomon/
William I. Solomon
Registration No. 28,565
ANTONELLI, TERRY, STOUT & KRAUS, LLP

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Attachments